深圳市鼎科实业有限公司

Shenzhen TOP-TECH Industrial CO.,LTD

User Manual

Model：HZ-LY22BUV1.0

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Catalogue（目录）

目录

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1. General Specifications

■ HZ-LY22BUV1.0 is a high performance intergrated wireless and Bluetooth module with USB 2.0 interface.It is based on Realtek RTL8822CU-VB-CG,It supports IEE802.11 a/b/g/n/ac and BT5.0.It also supoort 2T2R MIMO .

■ The module MAC supports 802.11e for multimedia applications, 802.11i and WAPI for security, and 802.11n/802.11ac for enhanced MAC protocol efficiency.

2. WIFI Specifications

| Protocol	IEEE 802.11 a/b/g/n/ac
Interface	USB 2.0
Bandwidth	20/40/80 MHz
2.4G Transmit Power	802.11b(2.4G 11M): 17±2dBm @ EVM<-20dB; 802.11g(2.4G 54M): 15±2dBm @ EVM<-28dB; 802.11n (2.4G HT20 MCS7): 14±2dBm @ EVM<-28dB;
5G Transmit Power	802.11a(5G 54M): 15±2dBm @ EVM<-28dB; 802.11n (5G HT20 MCS7): 14±2dBm @ EVM<-28dB; 802.11n (5G HT40 MCS7): 14±2dBm @ EVM<-28dB; 802.11ac (5G VHT20 MCS8): 13±2dBm @ EVM<-30dB; 802.11ac (5G VHT40 MCS9): 12±2dBm @ EVM<-32dB; 802.11ac (5G VHT80 MCS9): 12±2dBm @ EVM<-32dB.
Frequency Error	<±20ppm/802.11 a/b/g/n/ac
2.4G Receive Sensitivity @ PER<10%	802.11b(2.4G 1M): -95dBm,typical; 802.11b(2.4G 11M): -85dBm,typical; 802.11g(2.4G 6M): -89dBm,typical; 802.11g(2.4G 54M): -75dBm,typical; 802.11n (2.4G HT20 MCS0): -88dBm,typical; 802.11n (2.4G HT20 MCS7): -72dBm,typical; 802.11n (2.4G HT40 MCS0): -88dBm,typical; 802.11n (2.4G HT40 MCS7): -69dBm,typical.
5G Receive Sensitivity @ PER<10%	802.11g (5G 6M): -88dBm, typical; 802.11g (5G 54M): -74dBm, typical; 802.11n (5G HT20 MCS0): -88dBm, typical; 802.11n (5G HT20 MCS7): -72dBm, typical; 802.11n (5G HT40 MCS0): -88dBm, typical; 802.11n (5G HT40 MCS7): -69dBm, typical; 802.11ac (5G VHT20 MCS0): -89dBm, typical; 802.11ac (5G VHT20 MCS8): -67dBm, typical; 802.11ac (5G VHT40 MCS0): -87dBm, typical; 802.11ac (5G VHT40 MCS9): -64dBm, typical; 802.11ac (5G VHT80 MCS0): -85dBm, typical; 802.11ac (5G VHT80 MCS9): -60dBm, typical.

3. BT Specifications

| Protocol	BTv2.1+EDR/BTv3.0/BTv3.0+HS/BT v5.0
Interface	USB2.0
Frequency	2400 MHz ~ 2483.5 MHz (79 channels)
Modulation	GFSK,π/4-DQPSK, 8-DPSK
PHY Rate	1Mbps for Basic Rate; 2、3 Mbps for Enhance Data Rate; 1、2 Mbps for BLE
PHY Rate Transmit Power	6dBm, typical
Receive Sensitivity	<-89dBm @ BER=0.1% for GFSK (1Mbps); <-86dBm @ BER=0.01% for π/4-DQPSK (2Mbps); <-83dBm @ BER=0.01% for 8-DPSK (3Mbps); <-90dBm @ PER=30.8% forBLE
Maximum Input level	GFSK(1Mbps):-20dBm; π/4-DQPSK(2Mbps): -20dBm; 8-DPSK(3Mbps):-20dBm.

4. Power specifications

Symbol	Parameter	Min.	Typical	Max.	Unit
VDD_3.3V	3.3V Supply Voltage	3.0	3.3	3.6	V
VDD_3.3V	3.3V Rating Current	1	-		A

5. System Block Diagram
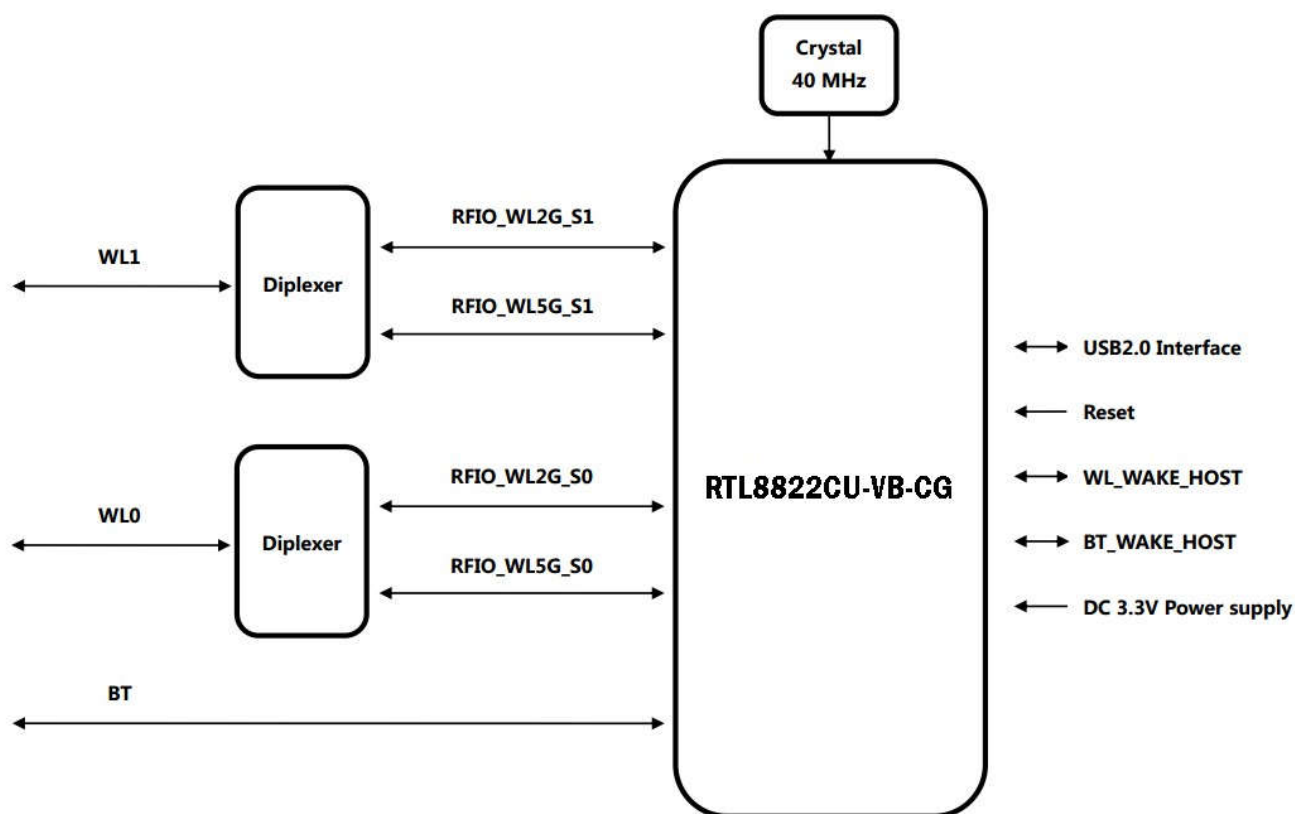
6. Module configurations

All of pictures below are only for reference. Please take the actual objects as a standard.
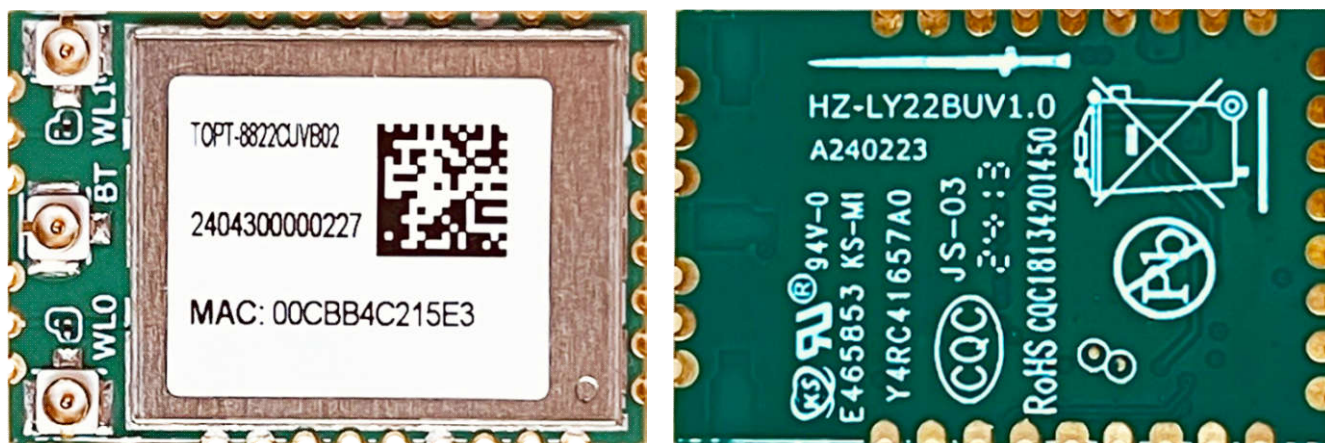
∗The silk-screen at the bottom of the module is produced and controlled by the PCB supplier,and the silk-screen may vary among different board factories.

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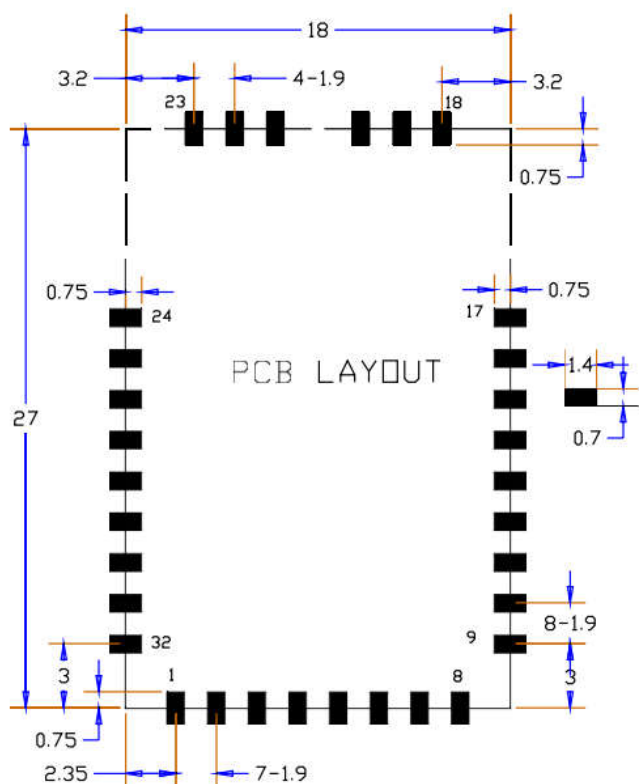SHENZHEN TOP-TECH INDUSTRIAL CO.,LTD

CAD DIMENSIONS

PCB thickness：1.0mm
Module overall thickness：2.6mm
With buckle thickness：3.4mm
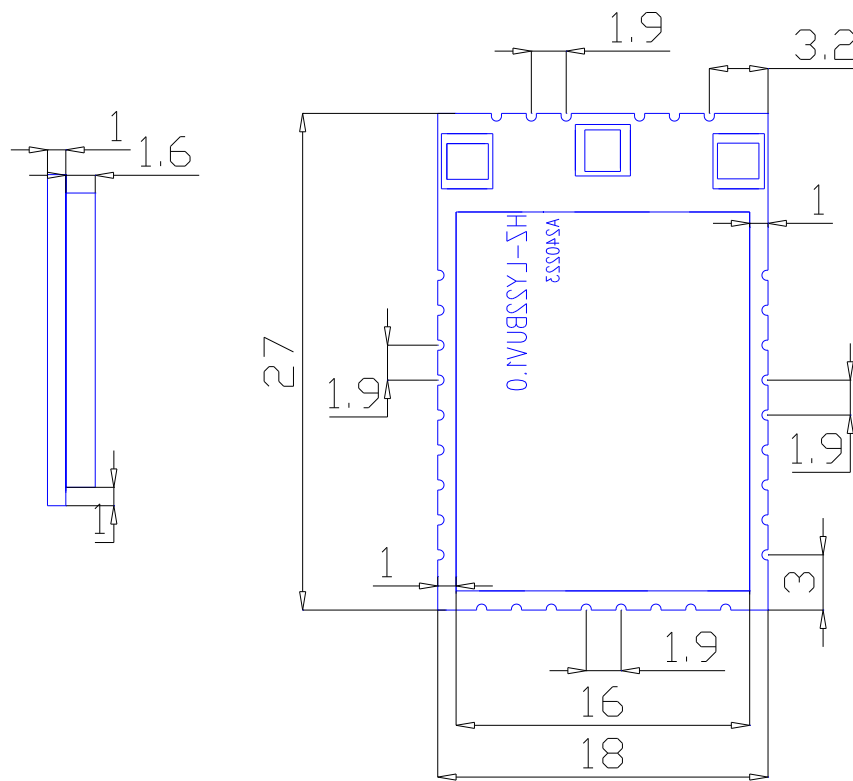
7. Pin definition

PIN	SYMBOL	DESCRIPTION	TYPE
1	NC	Not Connect	/
2	NC	Not Connect	/
3	NC	Not Connect	/
4	NC	Not Connect	/
5	GND	GND	/
6	WL_USB_DP	USB D+	I/O
7	WL_USB_DN	USB D-	I/O
8	GND	GND	/
9	NC	Not Connect	/
10	NC	Not Connect	/
11	GND	GND	/
12	NC	Not Connect	/
13	GND	GND	/
14	BT_WAKE_HOS T	BT CHIP WAKES UP HOST	O
15	HOST _WAKE_BT	HOST WAKES UP BT CHIP	I

16	NC	Not Connect	/
17	NC	Not Connect	/
18	GND	GND	/
19	NC	Not Connect	/
20	GND	GND	/
21	GND	GND	/
22	NC	Not Connect	/
23	GND	GND	/
24	GND	GND	/
25	GND	GND	/
26	WLAN_WAKE_HOST	WLAN CHIP WAKES UP HOST	O
27	NC	Not Connect	/
28	CHIP_EN	Shutdown CHIP （Internal 47KΩ pull up to 3.3V， low level active）	I
29	GND	GND	/
30	VDD33	3.3V	I
31	GPIO5	General Purpose Input/Output Pin	I/O
32	GND	GND	/

8. Matters Need Attention

* Storage period of vacuum packaging module:

(1) Storage period: 12 months, storage environment conditions: temperature: <40℃, relative humidity: <90%R.H.

(2) After the module packaging is removed, the SMT assembly time limit:

(3) Check the humidity card: the displayed value should be less than 30% (blue), such as: 30% to 40%(pink) or greater than 40%(red) indicates that the module has absorbed moisture.

① Factory ambient temperature and humidity control: ≦30%℃, ≦60%R.H.

② After unpacking, the storage life of the workshop is 168 hours.

(4) If it is not used within 168 hours after unpacking, it needs to be baked, and the baking conditions are as follows:

① The module must be re-baked to remove the module moisture absorption problem.

② Baking temperature: 125℃, 8 hours.

③ After baking, put appropriate amount of desiccant and seal the package.

(5) The number of vacuum packaging modules shall be subject to the actual number of packaging required by customers.

Note: The above packing method is subject to customer's requirements, and the packing is subject to actual shipment.

9. FCC Modular Usage Statement

The requirement for KDB 996369 D03:

2.2 List of applicable FCC rules

FCC CFR Title 47 Part 15 Subpart C Section 15.247 and 15.407

2.3 Summarize the specific operational use conditions

The module has been certified for Fix, Mobile, Portable applications. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

2.4 Limited module procedures

Not applicable

2.5 Trace antenna designs

Not applicable

2.6 RF exposure considerations

This modular complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This modular must be installed and operated with a minimum distance of 20 cm between the radiator and user body.

2.7 Antennas

The antenna is permanently attached,

BT	
Antenna Type:	Copper tube Antenna
Antenna gain:	1.86dBi
WIFI	
Antenna Type:	Double copper tube Antenna
Antenna gain:	WIFI 2.4G ANT: 2.31dBi

WIFI 5G ANT: 2.52dBi @Band I, 3.51dBi @Band II-2A, 5.57dBi @Band II-2C 4.61dBi@Band III

2.8 Label and compliance information

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed andused in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.

If the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains Transmitter Module FCC ID: 2BGY7-HZ01 Or Contains FCC ID: 2BGY7-HZ01"

2.9 Information on test modes and additional testing requirements

The modular transmitter is only FCC authorized for the specific rule parts (FCC Part 15.247) list on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed when contains digital circuity.

2.10 Additional testing, Part 15 Subpart B disclaimer

When testing host product, the host manufacture should follow FCC KDB Publication 996369 D04 Module Integration Guide for testing the host products. The host manufacturer may operate their product during the measurements.